

Geometric Optics:

- Mirrors:

- Concave \rightarrow 6 cases

- Convex \rightarrow 1 case

- Lenses:

- Converging \rightarrow 6 cases

- Diverging \rightarrow 1 case

- Know how to calculate image

distance, magnification, image height

- Use above to find characteristics

Physical Optics :

- Single-slit interference
- Double-slit interference
- Diffraction gratings
- Know how to use equations and what each variable means

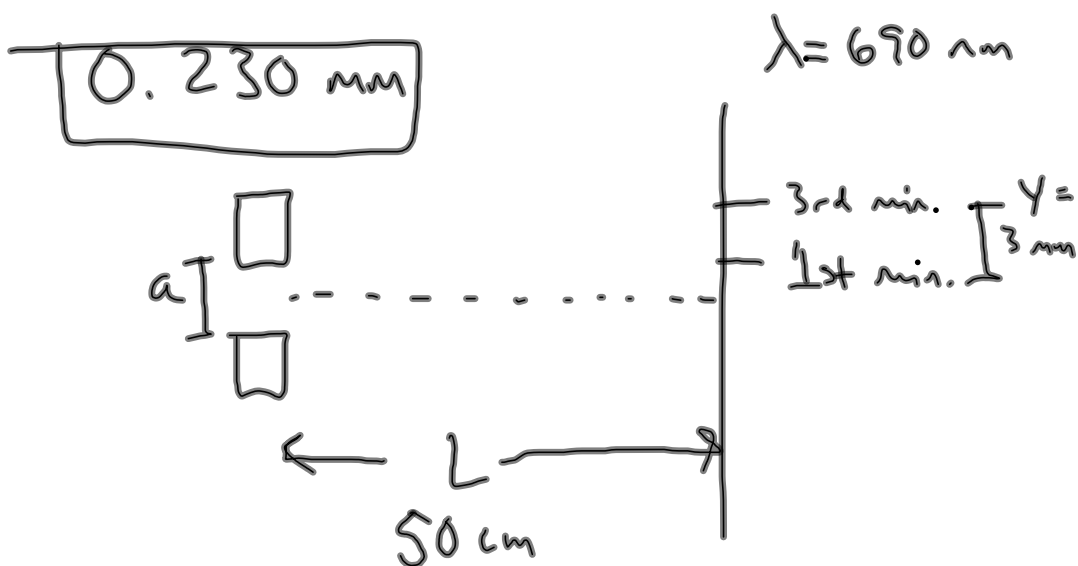
Two narrow, parallel slits separated by 0.250 mm are illuminated by green light ($\lambda = 546.1 \text{ nm}$). The interference pattern is observed on a screen 1.20 m away from the plane of the slits. Calculate the distance (a) from the central maximum to the first bright region on either side of the central maximum and (b) between the first and second dark bands.

a) 2.62 mm

b) 2.62 mm

Geometric and Physical Optics Review and Practice Problems 2.21.12 AP Physics

A screen is placed 50.0 cm from a single slit, which is illuminated with 690-nm light. If the distance between the first and third minima in the diffraction pattern is 3.00 mm, what is the width of the slit?



$$y = \frac{m\lambda}{a}$$

$$m = 3 - 1 = 2$$

$$a = \frac{m\lambda}{y}$$

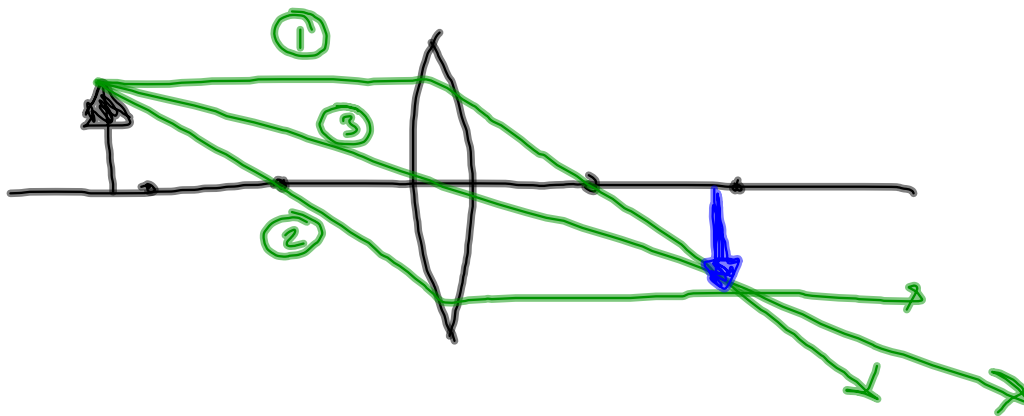
$$= \frac{(2)(690 \text{ nm})}{(3 \text{ mm})}$$

$$= 0.230 \text{ mm}$$

Converging lens, $f = 20 \text{ cm}$

Object at 45 cm , 10 cm tall

Find image distance, height, magnification and characteristics.



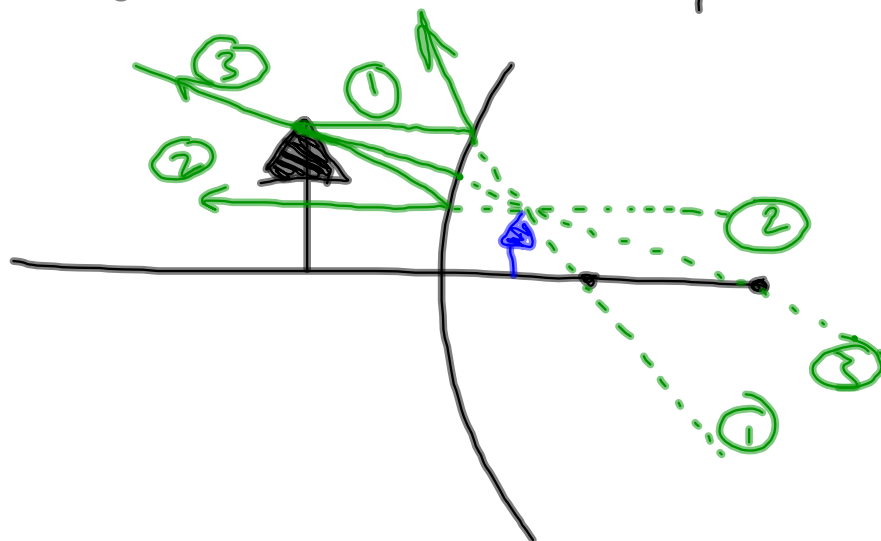
Characteristics: real, inverted, smaller

$$d_i = 36 \text{ cm}$$

$$h_i = -8 \text{ cm}$$

$$m = -.8$$

Convex mirror rays:



Diverging lens rays:

